

Bandwidth Controllable Tunable Filter for Hyper-/Multi-Spectral Imager, Phase I

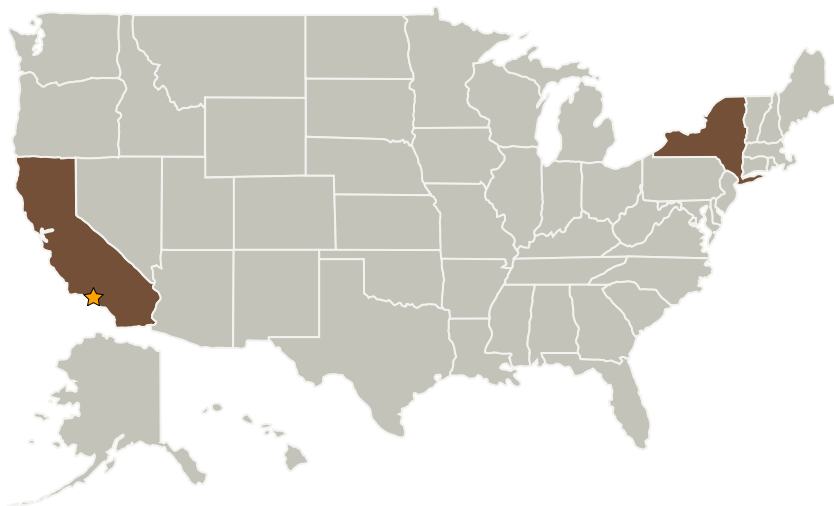
Completed Technology Project (2007 - 2007)



Project Introduction

This SBIR Phase I proposal introduces a fast speed bandwidth controllable tunable filter for hyper-/multi-spectral (HS/MS) imagers. It dynamically passes a variable narrow band spectral component (li) from the visible to Infrared (IR). The filter has the following projected specifications: >95% in-band transmittance, <0.1% out-band leakage, >1,000 nm tuning range, a few to hundred nanometer variable bandwidth, 0.05 ms/nm tuning speed, large optical aperture size (10^2 ' 10^2 possible), and excellent environment stability against temperature fluctuation, mechanical impact and vibration. These performance characteristics, particularly the variable bandwidth, are not reachable for both commercial products on-the-shelf and state-of-the-art technologies. This filter is a vital enabling component for many photonics instruments such as multi- and hyper-spectral imaging system, Ladar/Lidar, mine detector, and optical beam steerer for tracking, ranging, measure and free-space optical communication. The Phase I objective is to demonstrate the feasibility for the tunable filter while the Phase II objective is to optimize the filter through which prototype filter(s) will be developed. The success of this project will open a new era for manufacturing tunable band-pass filters with the desired performance characteristics.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Kent Optronics, Inc.	Supporting Organization	Industry	Hopewell Junction, New York

Primary U.S. Work Locations	
California	New York

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.1 Detectors and Focal Planes